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FOR

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RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES AND INSECTS.

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Ornithological Notes for the last Six Months, including Extracts from the Journal of a Nesting Tour in Sutherland. By JOHN A. HARVIE BROWN, Esq.

December 17, 1867. Snowy owl captured at Montrose (Zool. S. S. 1058).

January 4, 1868. To-day, when down at Grangemouth, I was informed by several trustworthy persons that during some misty weather in December, a flock, or part of a flock, of wild geese (bean) alighted in the streets of the town, and three or four were killed with sticks and stones, and one actually found its way into a butcher's shop, whence, as may be supposed, if the proprietor obeyed his instincts, it did not so easily make its exit.

January 7. Saw in a birdstuffer's premises (Mr. P. Allan's), in Stirling, a blackheaded gull, having a curious abnormal quill growing from the left pinion: it was a bare quill, with only a few fibres of feather at the extremity. The bird was shot a few days previously on the banks of the Forth below Stirling.

January 9. Saw a little grebe on the river (Carron).

January 10. Two young goldeneyes, male and female, killed on the river. I have generally before obtained adult birds in the same locality.

February 4. Saw a kestrel distinctly, with a glass, hovering over the copse-wood. There are few seen inland at this season, though not unfrequently they are seen at the coast.

March 26. Small parties of blackheaded gulls have been frequenting the low lands near the river for the last few days.

March 30. At Grangemouth shell-bank I killed a fine specimen of the pinkfooted goose, and wounded the other of the pair with my left barrel: they were flying in the same direction as, but keeping separate from, a large flock of bean geese, and came over the ditch in which I lay concealed. Saw to-day a few curlews, redshanks and one dunlin, some blackheaded gulls and a few ducks out at sea.

April 3. Made a reconnoitering trip to a peregrine's eyrie: saw the birds. The man who was with me told me that he distinctly remembers the falcons breeding at the same spot thirty years ago, and of the young having been taken out by a person whom he knew and named. Ravens occasionally, in the absence of the falcons, occupy the same cliff.

BRITISH MUSEUM

April 9. Dipper's nest, but no eggs yet. Jackdaws have taken possession of the chimneys in the garden-wall, where starlings built before. Kingfishers going to breed at the same place where I took their eggs some years ago. Partridges seem tolerably plentiful as compared with former years.

April 20. Second visit to peregrines, with ropes, &c.; unsuccessful.

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After returning from Sutherlandshire I received from a correspondent a very fine blackthroated diver, which will be a mother to the poor little young one which I procured last year (Zool. S. S. 857).

During my absence Mr. F., of Arngibbon, about ten miles west of Stirling, found an albino starling dead, and sent it to my birdstuffer in Edinburgh for me: it was quite warm when he picked it up, and I regret that I did not hear of it soon enough to give the birdstuffer directions as regarded examining the cause of death: it is of a pale ashy white, and the eyes were black, not red. I also obtained a white mole from the same place whence I procured one some years ago: this one was caught in the mole-catcher's traps.

On the 27th of June I received a nest of five lesser redpole's eggs, taken by a birdcatcher near here, who likewise caught the bird on the nest. The lesser redpole does not breed abundantly in this county that I am aware of, though large flocks arrive in winter.

Nesting Tour in Sutherland.—It is not my purpose here to give any very extended notes of my nesting tour in Sutherland, as I have already handed over to Mr. R. Gray, of Glasgow, most of my journal, but shall just give a few extracts, in a curtailed form, which may be of interest to the readers of the 'Zoologist.'

April 25, 1868. Arrived at my old station in West Sutherland today, after having spent a few days in Ross-shire. (Talking of Ross-shire, I am not the person mentioned in 'Land and Water' of the 27th of June, who it seems offers £10 for eagles' nests or eggs in the Gair Loch district: I sincerely trust that such a system will speedily be put a stop to.) Received one golden eagle's egg, which was taken from the same nest that the young bird was procured from last August: it had been in the nest since last season, and therefore is rather a faded specimen. The young bird is now, I believe, in the possession of the Duchess of Sutherland.

May 2. Saw no less than four greenshanks on the shores of one loch to-day.

May 5. Took two small but finely-marked buzzard's eggs, and fired at the female as she flew off the nest. Nest in a very simple place. Took the eggs out by means of a long stick, to the end of which my round hat was attached. Though there were only two eggs in the nest, nevertheless they had been sat upon for some time, and I had to leave them awhile unblown, in order the more easily to get out the contents. This year I knew of some six or seven buzzards' nests: some were inaccessible, others had young. There is no person in the district who is at all expert at rock climbing.

May 7. Saw both peregrines at the old place. I brought the best cragsman to be found in Assynt and Edderachyllis some twenty miles to try and take out the young falcons, some time after this, but he just looked at the rock and owned he was quite beaten by it: this man is a splendid cragsman, and on sea-cliffs, where the rock is firm, I never saw him surpassed; but this particular rock is exceedingly friable and dangerous, and besides there is no place above where a rope can be held. The inland cliffs here being for the great part formed of limestone are of a similar nature, and quite different from those at the coast or at Handa. Some of the above-mentioned buzzards' nests might have been got at with good ropes and an experienced cragsman, but of four peregrines' eyries which I knew of this year only one inland one could have been reached, and that only with great caution.

May 8. Shot a fine redthroated diver as a companion to the one I received last season (Zool. S. S. 856) on the 6th of June.

May 11. Found a blackthroated diver's nest ready for eggs; these, when laid about a week afterwards, were destroyed by those "dreadful vermin" the hooded crows; upon these, however, the same day summary vengeance was taken, they having a nest on another island of the same loch. I obtained a good series of hooded crows' eggs this season.

May 13. Amongst other things got to-day was a diminutive wild duck's egg, not so large as a partridge's: there were seven other eggs in the nest

May 18. Got a lot of eggs from collectors at Loch ——, amongst which were two blackthroated diver's and some wild geese, snipe, teal, &c. I got a nice series of snipe's eggs this season: no two nests of eggs were alike; also a nice series of golden plover's, of which, however, from their having been kept too long unblown, I only succeeded insaving two complete nests.

May 19. Saw two pair of blackthroated divers to-day on one loch, which is rather uncommon. Gillie swam out to one green island, but did not find the eggs. Oh! what would I not have given for a light corracle or India-rubber boat or canoe. There were at least a dozen or eighteen islands on this loch, and herons, divers, ducks and geese breeding on them, and other birds, very likely, that I wot not of.

May 20. Keeper and I missed a buzzard to-day with all four barrels. We set a trap, however, baited with half a young kid which we had found dead on the hills, and a few days after got one of the pair, but the trap had spoiled the legs, and, in its struggles, the bird, as far as stuffing was concerned. I kept the wings "in memoriam."

May 21. Took four eggs of the ringed ouzel: its nest was built in the bottom of an old hooded crow's nest, which also last year was occupied by a pair of kestrels: the female flew off the nest.

May 23. Obtained a nest of four very fine greenshank's eggs: the person who took them yesterday, and brought them to me unblown, knew of the nest before the eggs were laid. This season I got another complete nest of greenshank's eggs collected along with the golden plover's, before referred to, redbreasted mergansers and other things, for me in another part of the county. The person who took the last nest got them by remaining out all night, and watching the bird go on to the nest in the morning.

May 26. To-day, during an excursion to the Badcall Islands, distinctly saw a purple sandpiper, in splendid plumage: it rose off the low rocks close to the sea at the report of my gun, flew out to sea for a long distance, in the teeth of a gale of wind, and then turned and flew back, and alighted this time on the top of the island amongst some bent grass: I failed, however, in seeing it again. Took to-day a good many eggs, amongst which were two nests of the great blackbacked gull's, lesser blackbacked gull's, herring gull's (comparatively scarce here), common gull's, oystercatcher's, kestrel's, &c. Saw an eyrie of a peregrine: collector had tried to take the eggs, but could not; saw also a buzzard's nest with young, not removed more than a hundred and fifty yards from the falcon's. A squall struck our boat in Cairnbawn Loch and tore our sheet, when four miles and a half from the ferry, so we had to row that distance. Heard that a correspondent in the east of the county has for me the following eggs:—greenshank's, hen harrier's, merlin's, woodcock's, shieldrake's, and commoner things, such as redshank's and ringed dotterel's.

June 1. Having observed a pochard drake some days previously on a certain loch, I went up to it to-day, accompanied by an assistant, to endeavour to get him. Saw him whenever we arrived at the loch, and without much trouble secured him, by lying hidden and getting the gillie to drive him towards me. Two men searched with dogs nearly a whole day and part of a second for the female and the nest, both on the loch sides and along the burn, but were not successful. The eggs which Mr. Jesse and I obtained last year at Loch Skennaskink on the 5th of June (Zool. S. S. 856), and which we at first thought were widgeon's, I now believe to be pochard's, as they more closely resemble identified eggs of that bird than of any other duck's: the cream-colour has now faded and a greenish tinge is discernible. Mr. J. E. Harting, to whom I sent specimens of that nest, first drew my attention to the fact of their resembling pohcard's eggs, he having compared them: I have since had opportunities of comparing with identified specimens of pochard's eggs, and certainly am of opinion that our eggs are identical with them.

June 2. Received merlin's eggs from the same locality whence the dark sepia-coloured egg was obtained last year on the 6th of June (Zool. S. S. 856): two of this nest were very light coloured. Also received one merlin's egg from the same pair of birds, probably, whose eggs I took last year on the 23rd of May (Zool. S. S. 853). The shepherd who took these this year broke three of the nest in bringing them to the inn. This pair of birds "shifted" twice before the eggs were discovered.

June 5. To-day discovered the great northern diver breeding on a wild lonely loch of Assynt: I quite satisfied myself as to their identity; I have already given Mr. R. Gray minute particulars, and shall only mention here the most striking peculiarities which I observed in the behaviour of the birds. *First*, the cry was only of two syllables, pitched in a high key, and could be heard a long way off, and seemed to be a cry of warning to the female which was on the nest: he was not heard to cry until we appeared at the side of the loch; I can imitate the cry very perfectly, though I cannot easily describe it: he also uttered, but not so frequently, the "gruck, gruck," which the blackthroated diver generally gives utterance to when alarmed. *Secondly*, the bird flew a long distance up the loch and returned to the same spot, I fancy, trying to decoy the female from the nest: he seemed when flying to be as large as a cormorant. *Thirdly*, no divers of any kind were ever known to breed at this loch before by either the keeper or by a gillie, both of whom were with me to-day, and who know the loch well. The bird was distant about two hundred and fifty yards from shore, and kept always not more than fifty yards from the only *green* island on the loch, on which I feel certain the female was sitting on her eggs. A gentleman who was with me now attempted to swim out to the island, but the water was intensely cold, and he being out of practice could only accomplish about one-third of the distance, when he had to turn: the moment he entered the water, as I had expected, the female must have dived off the nest, as, for the first time, the two birds were seen together. The eggs must have been almost, I believe, on the point of hatching, she seemed, up to the time when danger most threatened, to be so unwilling to leave them, notwithstanding the repeated calling and uneasy movements of her mate. This loch is miles and miles from any habitation where a boat is kept, and the ground around it is so wild and rugged that it would be an immense labour to bring anything but a canoe or an India-rubber boat to it, if indeed it were not almost impossible to do it at all. I do not believe that they will be further disturbed this season, and think that they will have every chance to bring off their young in peace and safety.

June 9. Scowrie. Yesterday came here. Tremendous gale outside the bay, and all agreed it was dangerous, if not impossible, to go to Handa from Scowrie. Walked across four miles to Tarbat, and thence managed with four oars to row over to Handa, where we landed about ten o'clock. Got what eggs and birds I wanted. Received a lot of other eggs from collectors at Scowrie, and some information regarding the habits of the rock birds when feeding their young.

June 10 and 11. Returned to head quarters, bringing the Handa cragsman with me to try for the young falcons which Mr. MacIvor, the duke's factor, was anxious to procure. We went to the rock, but with what success I have already related.

June 14. Left Bonar by the mail at six o'clock this morning, and arrived at home about the same hour in the afternoon. Am to receive still a box of eggs from each of two correspondents whom I had no opportunity of meeting with during my tour.

Obtained thirty-five species of birds' eggs, not including some that are yet to come, a fine wild cat's skin, a pochard drake, and a red-throated diver. I also forgot to mention that I observed a specimen of the tree pipit, which bird I never before observed in the treeless, or almost treeless, district of Assynt: it sat on an ash-tree close to the inn, and within a few yards of where I was at the time sitting. Cuckoos were heard first on the 5th of May: I do not think they were more plentiful here this year than last, though I see that such has been considered the case in some parts of England. Swallows and martins were much more abundant, but the latter had not yet laid eggs in the cliff behind the inn, when I left. Also saw a good many sand martins near Ledmore.

"Teochvingh" is a local Gaelic name here for the greenshank.

John A. H. Brown.

Dunipace House, Falkirk,
July 1, 1868.

Wayside Notes in France and Germany.

By Edward R. Alston, Esq.

The following are a few miscellaneous notes collected during a short tour through part of France and Germany this May. A modern traveller sees but little of the animal life of the countries through which he is hurried in railway-carriages and steam-boats, while the fact of his resting-places being usually at towns is also a disadvantage. In addition to this, an almost tropical heat, such as we experienced even at that early season, is not favourable to energetic research, rendering a mid-day pipe in the shade (not to speak of a brief repose) more inviting than a breathless scramble over rocks and through steep and thorny thickets. Accordingly the following notes refer almost exclusively to the museums we visited, and to the Fauna of the Black Forest and the country near Freiburg-im-Breisgau, where we spent nearly a fortnight, and had thus some leisure for observation. It will be sufficient to state that our route led from Paris by Strasburg to Freiburg and Basle, and thence homewards by Baden-Baden, Heidelberg and the Rhine. Fear not, reader, you are not about to suffer under glowing but somewhat trite descriptions of the smiling Rheinebene and Breisgau, of the dark hills of the Schwartzwald, still flecked with snow, of the rugged Höllenthal, or of the lovely Murgthal, with its towering pines, nestling villages and quaint old schloss. Not even my old favourite, the castle at Heidelberg, with its beautiful contrasts of red stone and green ivy, nor "the castled Rhine," nor the oft-sung Drachenfels itself, shall tempt me into legend or description. I have but little to say, but such as it is shall be an unadorned tale.

Museums.—I made a more careful examination of the great collections at the Jardin des Plantes than I had ever done before, and on the whole I must confess to being disappointed with the quadrupeds and birds, which are mostly very well stuffed but too crowded, and many of them, like those in the British Museum, much faded in colour. Some of the birds, however, are models of the preserver's art: a magnificent ostrich, in particular, deserves attention, from the skill with which the naked pink skin of the head and neck is rendered. Some of the larger Cetacea are represented by painted casts and models, a good plan in the case of animals so difficult to preserve entire. I was also much pleased with the well-arranged series of birds' nests, much more advantageously displayed than those in the British Museum, and each accompanied by specimens of the architects. As to the Galleries of Comparative Anatomy and of Anthropology, they are beyond all praise.

Naturalists visiting Paris should not fail to seek out M. Duval's "Grand Aquarium," Boulevart Montmartre, No. 21. This being a private enterprise, and principally intended as a popular exhibition, the arrangements are in some cases somewhat theatrical, but the tanks, of great size and admirably designed, contain a large collection of marine and fresh-water animals, apparently in perfect health. Among others there are examples of the Japanese salamander (*Sieboldia maxima*) and the axolotl (*Axoloteles guttatus*), congers of from twenty-six to thirty inches in length, barbels, gray mullets, Hippocampi and pipe-fish in considerable numbers, and most of the commoner marine and fresh-water fish, including several torpedoes, native and foreign. Some of the common three-spined sticklebacks are exhibited in *salt* water, in which they appear to thrive perfectly. I observed one of the common river lampreys attached to the head of a dying bleak: Yarrell notes that this species feeds on the flesh of dead fish, but does not mention that it attacks live ones like its marine congener: in Loch Lomond Mr. R. Gray states that it preys on the powan (*Coregonus Lacepedei*), "which are often taken in a dying state with lamperns sticking fast on their sides."—(Keddie's Guide Book). On emerging from the winding galleries of rock-work which compose the "Grand Aquarium," one cannot help wondering why a private speculator should be allowed so completely to out-do our powerful and usually energetic Zoological Society in this matter of water-works.

The only other museum I had leisure to visit was a small but well-arranged one at Basle, containing interesting local collections, of which I had only time to study the Mammalia. Among the bats I noticed V. noctula, V. murinus, V. pipistrellus, V. serotinus, V. discolor, V. Kuhli and P. auritus. Among the shrews of the country are S. araneus, S. leucodon, S. fodiens and S. alpinus (the latter a large dark-coloured species, hitherto only found on some of the higher Alps); the specimens of S. vulgaris (our common shrew) are labelled as being from Sweden and the Volga. Among the voles there is a large species with a very short tail, named "Hyp. terrestris;" Dr. Gray gives "M. terrestris, *Erx.*," as a synonym of Arvicola arvalis (List. Mam. Brit. Mus. p. 118), but the present example is nearly as large as A. amphibius. Of the last-named species there is a specimen of the black variety and also an unusually large example of the bank vole.

The Black Forest.—I will now note a few facts as to the Zoology of the Schwartzwald or Black Forest and the adjoining country, combining with these a few observations made there six years ago.

Of the quadrupeds I cannot say much. The pine marten and beech marten occur, and the badger is common, as are also the smaller Mustelidæ. The otter is found in most of the rivers, and the wolf still lingers in the inner recesses of the great mountain mass of which the Schwartzwald forms part: only two winters ago a pair of them took up their abode not far from Heidelberg, and wrought not a little mischief among the flocks and herds before they were captured; they are, however, almost exterminated in this part of Germany, but are said to be more abundant in some of the forests near the Rhine. The fox is extremely plentiful in all the hilly forests, and appears to be more familiar than it is with us: one evening, when driving through one of the valleys near Freiburg, a fox emerged from the wood within thirty yards of us, and stood composedly watching us pass, switching his brush from side to side with the greatest unconcern. In Germany, where the fox is considered fair game for the gunner, the skin is always preserved for the market, and the jägers divide them into three varieties, the "kohl-fuchs" or black, the "silber-fuchs" or white, and the "roth-fuchs" or red fox, according to the predominant tint of the mixed hairs of the coat: of these the "kohl-fuchs" is the rarest and most valuable, while the "roth-fuchs" is the commonest. The roe-deer is even more plentiful in the sunny beech woods of the plains than in the sombre fir forests of the mountains: in the Mooswald, near Freiburg, about two hundred head were killed last season: I have already made some remarks on the habits and distribution of this species (Zool. S. S. 778). The red deer is still found in some parts of the Schwartzwald and Odenwald, but in many districts it is now extinct, and the wild boar is now mostly confined to a few strictly preserved forests. Of the smaller Mammalia I can at present say nothing.

Birds struck me as being rare in the larger forests, and I was unfortunately too late for the egg season. Many species which are residents here are in Germany either total or partial migrants, owing doubtless to the greater severity of the winters: this greater cold also causes the field mice and voles to seek shelter in barns and outhouses, thus forcing many of the birds of prey to shift their quarters. I may here give the dates of arrival of some of the spring migrants near Heidelberg, as observed in 1861 by one of my brothers: of these the fieldfare and woodcock are merely passing visitors, only seen for a short time in spring and autumn.

Song Thrush	February	23.
Kite	"	"
Common Buzzard	"	28.
Woodcock	March	2.
Starling	"	4.
Fieldfare	"	12.
Black Redstart	"	25.
Wryneck	April	7.
Chimney Swallow	"	10.
Common Redstart	"	"
Cuckoo	"	18.
Hoopoe	"	20.

Of birds of prey I saw but little on this trip; all the species are now rather rare near Freiburg, a considerable "schutzgeld" or reward being paid for them. The kite and buzzard are, however, common in many parts, as is also the goshawk in the larger forests, and the kestrel and sparrowhawk are plentiful. The eagle owl is abundant in the fir woods; one man killed no less than seven head in the Sternenwald (near Freiburg) last winter. The tawny owl sometimes takes up its abode along with the barn owl in the church steeples.

Both the redbacked and woodchat shrikes are frequently seen, often in company, especially in copse-wood near vineyards, where they find an ample supply of food in the large grasshoppers, whose chirping is so continually heard at this season all over the Continent: I very often noticed them perched on the telegraph-wires. The black redstart is one of the commonest garden birds, breeding in out-houses, barns, &c.,

and may often be observed climbing the rough walls of houses in a way that reminds one of the creeper. The robin is decidedly a rare bird in most parts of Germany (I only saw one this May), and the "hausrothschwäntzchen" or black redstart takes his place, to some extent, as a popular pet and favourite. As in this country, the nightingale appears to be somewhat capricious in its local distribution in Germany, very abundant near Baden Baden and Achern; it is quite unknown at Freiburg, although the country and climate are much the same. The sky lark, however, is very plentiful among the rich level meadows. I was surprised to see and hear so very few titmice in the great pine forests; several species, however, occur there, including the crested titmouse. The golden oriole and the hoopoe are also regular visitors to the Black Forest, although I met with none on the present occasion. Carrion crows are often seen, but the rook appears to be scarce. Magpies and jays, on the other hand, abound, as in most parts of Germany and France, and are singularly bold and impudent.

The capercaillie is not uncommon in many of the forests, and the male is often shot with a rifle in spring while "playing," the stalking of the bird at that time being considered a masterpiece of woodcraft. The black grouse is also found, and in some districts the rarer hazel grouse (*Tetrao bonasia*), while the cultivated grouse is inhabited by the common partridge and the quail.

Of the waders the most conspicuous bird to the traveller is, of course, the stork: the birds are more abundant in Strasburg than in any other town I have visited, but the place in which I have seen them in most numbers is the Lüneburger Heide, a great heathy or moorland tract in Hanover, where I have counted twenty-five in one field. At Achern I saw a stork's nest built in a tall poplar tree: this, however, is considered a great rarity. The clattering of this bird's bill is a very singular sound, and is sometimes strangely mingled with the cries of the live frogs, which they carry to their nests. Often the stork sails round and round in wide circles, almost as motionless as the albatross: a German friend assures me that he has watched one for several minutes without being able to detect the slightest movement of the wing. As already observed, the woodcock passes over this part of Germany in spring and autumn, and doubtless many other waders occur in suitable places.

Of water-fowl, wild geese and ducks occur on the rivers, but of what species I cannot say. I observed a blackheaded gull circling over the innumerable islets of the Rhine between Freiburg and Basle, at a distance of about four hundred miles from the Gulf of Genoa, the nearest sea-coast.

Reptiles are very abundant in this part of Germany. On the sunny banks of the vineyards and in the open forest glades you constantly hear a short sharp rustle among the withered leaves, and (if you are quick enough) you may capture either the very handsome sand lizard (*Lacerta agilis*), often beautifully tinted with green, or the more plainly-clad L. vivipara: the true green lizard (*L. viridis*) I have never met with. In a wood near Freiburg, where the slow-worm was very plentiful, I observed a fact worth recording: two of these reptiles were struggling together, and one of them had seized the head of the other so firmly in its jaws that it allowed me to lift it up and carry it for some distance by the tail without letting go its hold; the victim was about the same size as its captor, but in its writhings had broken off a considerable part of its tail: I had no idea that the slow-worm was of so combative a nature. We met with neither snakes nor vipers, although Natrix torquata, Coronella lævis and Pelias berus are all found in many parts of the Black Forest (Zool. 9559). The water-ditches which intersect the level meadows of the plains are literally alive with the edible frog (*Rana esculenta*), the "wasser-frosch," or water-frog, of the Germans—a capital name, for it is hardly ever found out of jumping range of its native element: indeed I found it not easy to procure specimens, for though they sometimes sit basking in the sun on the banks, they spring into the water the moment danger approaches, and bury themselves in the mud at the bottom: they often utter their peculiar croak even at mid-day, but at night the whole air re-echoes to the not unmusical sound. The common frog is not nearly so abundant. Besides the toad and rough and smooth newts the salamander (*Salamandra maculosa*) also occurs: this reptile is ovo-viviparous, and sometimes reaches a considerable size; a female in my collection is fully seven inches in length.

Fish.—The clear mountain-streams of the Black Forest abound with common trout, of small size but excellent flavour: they are generally taken with a net, and are often kept alive in tanks at the inns to be ready for the table. In many rivers the grayling is also found. Even the water-ditches mentioned above are full of coarser fish, such as barbels, tench, roach, minnows and miller's-thumbs, but of these I have not the materials for a complete list.

Insects.—Although not much of an entomologist, I may mention having observed the following species of butterflies either in Baden or near the Rhine:—Gonepteryx Rhamni, Anthocharis Cardamines, Vanessa Cardui, V. Atalanta, V. Io, V. Antiopa, V. Urticæ, several species of Argynnis, Polyommatus Phlæas and Lycæna Alexis; many of these must, of course, have been hybernated specimens. The cockchaffer was extremely plentiful throughout Germany this spring, and enormous numbers were destroyed, a reward being paid for them by the authorities.

EDWARD R. ALSTON.

Stockbriggs, Lesmahagow, N. B.,
July, 1868.

Notes on the Ornithology of Spurn Point.

By JOHN CORDEAUX, Esq.

THE position of Spurn Point, projecting two miles beyond the Yorkshire coast-line, bordered on the one side by the North Sea, on the other by the estuary of the Humber, here forming a deep and well-sheltered bay, offers many attractions to the wandering naturalist.

The Point itself is little more than an island of sand and shingle formed by the waste of the Yorkshire coast; for along all this coast-line of Holderness, from Spurn to Flamborough, the sea is ever encroaching on the land, slowly eating it up, at the computed average rate of two and a half yards in the year. To this waste the present Spurn Point owes its existence, as the *débris* of the boulder-clay and gravel cliffs is carried downward by the tidal current and deposited in banks and shoals of shingle at Spurn. The "island" of Spurn is connected with the main land by a narrow ridge of sand-hills, two miles in length—a great natural break-water and a guage by which we may estimate the waste of Holderness. Occasionally, with a high tide accompanied with a gale of wind, the wild North Sea makes a clean sweep across this sandy barrier into the estuary of the Humber, causing a breech to be repaired at a great expense by stone brought from the chalk cliffs beyond Hull. The light-house stands in the centre of the so-called "island," and is protected from any possible attack of the sea by a strong mass of masonry and concrete, like a circular fort: around this cluster the ever-shifting sand dunes, sloping away to the banks of shingle which seaward descend rapidly into deep water. Landing from a boat is at all times somewhat difficult, for the tide at ebb and flow sweeps round the island like a millstream.

These sand dunes at Spurn are in the autumn a favourite halting-place for woodcocks, and a well-known locality for the little gold-crests; and doubtless many another rare ocean wanderer, "stooping weary to the welcome land," here finds a temporary refuge. I believe in the spring and autumn the Point would be an excellent station for an ornithologist, in some respects superior to Flamborough Head.

These sand-hills are green with the waving sea-rush (*marram*), and at the time of my visit were gay with the green succulent leaves and large delicate pink and white flowers of the sea bind-weed, clusters of the gray-blue sea holly and thickets of the prickly sallow-thorn.

I extract from my book the following notes on the birds seen during a visit to the Point, with two friends, on the 2nd of July.

Lesser Tern.—There is a breeding-place of the lesser tern about half-a-mile from the light-house, near a break in the sand-hills where the sea has at some time swept across into the Humber. In consequence of the lateness of the season we found no nests; but near this place saw eight or ten pairs of these small terns on the wing, also a few young birds which on our approach rose from the shingle. These young terns were wild and shy, and the old birds particularly so, hovering overhead, beyond reach even of a green cartridge. Nothing can exceed the exquisite beauty of the little tern on the wing: seen against a back-ground of blue sky, they look half transparent, as if carved in ivory; their harsh cry, "chick, chick, chicker, chick," although somewhat monotonous, yet in harmony with the other voices of Nature, the whispering of the breeze over the "marram," and the screech of the fretful sea over its bed of pebbles. There were at this spot about the same number of a larger tern on the wing, and three or four young birds of this larger species: I believe them to have been the common tern, but do not feel certain about it. Mr. Wheelwright remarks of the lesser tern that "It appears to be confined to the very South of Sweden, and no where common." I have seen them on the west coast of Norway, as far north as the mouth of the Sogne fiörd; and some years since observed several of these little fellows hovering above the Leirdale stream, where it enters this fiörd.

Ringed Dotterel.—Breeds in some numbers at Spurn. In walking along the beach these birds were constantly rising, flying backwards and forwards across the "dunes," and ever complaining of our intrusion on their domains. I found one nest of this species—a slight hollow in the sand, half full of small white stones, and containing a single egg, fresh laid. Several young seen on the wing.

Dunlin.—Numerous, flying in flocks along the beach: judged one flock would number three hundred birds. Specimens shot were in full summer plumage.

Lesser Blackbacked Gull.—Two old and four young birds seen on the beach.

Brownheaded Gull.—Old and some young birds seen both along the coast and in the bay of the Humber.

Linnet.—Numerous; breeds on the sand dunes. Found a beautiful nest of this bird in a bunch of sea-grass: this pretty nest was constructed of the fine wiry roots of the "marram" and lined with tern feathers.

Black Scoter.—On recrossing the Humber we ran past and put up a flock of about one hundred and fifty scoters. The boatmen say this large flock has been off the mouth of the Humber throughout the spring and summer: they appeared to be mature birds. There is no doubt that considerable flocks of scoters remain on our coast during the whole year, not going northwards to breed. On dissection they would probably prove to be barren birds: I shall try and test the accuracy of this theory.

JOHN CORDEAUX.

Great Cotes, Ulceby, Lincolnshire,
July 13, 1868.

A Cornish Moorland Walk.—July 8th. Young snipes full grown and generally scattered about the moors between Kilmar and Dosmare Pool. Sandpipers to be seen in suitable localities. Curlews and lapwing plovers have reared their broods, at least a fortnight earlier than usual, and have left the moors. Found two broods of teal, one much stronger fledged than the other, and in plumage not to be distinguished from the old birds. I found several nests of the dunlin (*Tringa variabilis*), which confirm my remarks some weeks since, when I found flocks about Dosmare Pool apparently not in a breeding mood, that these birds are late breeders in many localities. All the nests I found were on elevated tufts of coarse grass in the marshes, and each nest contained three eggs hard sat. I found no young. Those who are acquainted with the locality of the "Jamaica Inn," in the heart of Bodmin Moors, might have remarked some fir plantations in some of the gullies and ravines. Two herons built and reared their young this year in one of the pinasters.—*Communicated by E. H. Rodd; Penzance, July 10, 1868.*

"*Wild Parrots in London.*—The existence of wild parroquets in London is more common than is usually supposed. A letter in a metropolitan contemporary states that a good many of them frequent Russell-square, where they may daily be seen feeding with the sparrows. The garden committee of the square, appreciating the presence of the gay little strangers, have appointed a commissionaire to look after and protect them." [The species is the grass parroquet (*Melopsittacus undulatus*). I was perfectly cognizant of the fact as regards the birds long ago, but the idea of protecting them is quite new to me. I should rather have expected to hear of the formation of parrot clubs and offers by churchwardens of a premium on their heads.—*Edward Newman.*]

Time of Arrival of Spotted Flycatcher in Stirlingshire.—I have to thank Mr. G. Roberts for directing my attention to a mistake which I made as regards the time of arrival of the spotted flycatcher in Stirlingshire. I fully intended to correct that mistake some time ago, but something occurred which caused me to forget to do so, and I have now to apologize, *first*, for the mistake, which must have emanated simply from my misjudgment at the time; and, *secondly*, for my having permitted such a mistake to remain so long uncorrected. The spotted flycatcher in this county, as in most other localities, arrives amongst the last of the migratory species. Therefore, at Zool. S. S. 68, fifth line from the top, *for* "much earlier," *read* "much later."—*John A. Harvie Brown; Dunipace House, Falkirk, July* 3, 1868.

Crossbills at Scilly.—A flight of these birds made their appearance in Trescoe Gardens last Friday. Whether they were broods with the old ones I am unable to say, as the variety of the tints and the mixtures of red, yellow and blue, baffles all speculation. They must have arrived in a flight, as none were observed before. Some had a considerable portion of red in their plumage, but none without a portion of dull brown mixed with the plumage, which took away anything like *brightness*. One I observed almost brown, with a slight tint of sulphur-yellow, and with the upper rump bright yellowish green or oil-colour: perhaps the ordinary adult plumage is bright scarlet, but the question is whether this in very old birds does not give way to yellow, or a mixture of that colour with slate-blue. Some of the specimens I received had blotches of all these colours intermixed, and apparently under the influence of moult.—*Edward Hearle Rodd; Penzance, July* 8, 1868.

[I have received several other communications on this subject, none I believe intended for publication. Crossbills have occurred all round London during the past month.—*E. Newman.*]

Note and Query regarding the Blackthroated Diver.—Having lately received from a correspondent in Sutherland a remarkably fine female blackthroated diver for my collection, I am very anxious to be certain about what is the most natural position in which it can be placed. I have seen during the last few years many pairs of these birds in their breeding haunts, and I have never yet seen one sitting in an upright position, but when on the ground always touching the surface with its breast and with its legs pushed out behind it. I have also questioned many of the natives of Sutherland, and, without a single exception, they have assured me that they never had seen the blackthroated diver in any position on land save in that last described. A young bird which I secured last year on the 8th of June (Zool. S. S. 857) lived a whole day and part of a second, and did not seem to be inconvenienced by the slight wound which it had received, as it willingly fed upon small pieces of raw fish, which we put inside its mouth. During that time it was never seen to sit upright, but always maintained the above-described position, and moreover did not seem to use its legs at all in the act of progression. I mention these facts just as I have noticed them. The female when seen to leave the nest does not *walk* into the water, but scuttles off, and a regularly formed groove in the channel or grass between the nest and the water is always plainly discernible. But, on the other hand, a gentleman in Edinburgh, who has a good knowledge of the habits of our British birds, and to whom my birdstuffer applied for a drawing of the bird to assist him in setting it up, drew a portrait of it in an upright position (see Morris's 'British Birds,' vol. vi. p. 11), and assured him that that was the position most natural to it. If so, is it not strange that I, who have had abundant opportunities of watching these birds, and have availed myself of them over and over again, both with the naked eye and with a good glass, have never yet se them assume a like position, and that moreover the natives who have lived amongst their haunts all their lives have, as I stated before, never seen them assume any other than that which I have attempted to describe? I shall be much obliged to any of the readers of the 'Zoologist' who may have seen the blackthroated diver in its breeding haunts, if they will say whether or not they have seen them sitting as figured in Morris's 'British Birds,' or as described and drawn by the gentleman above referred to.—*John A. Harvie Brown; July* 6, 1868.

A regular Visitor.—A land-turtle has been known to make thirty-seven annual visits to a particular locality on the farm of James A. Smith, near Mapleville, Burrillville, R. I. Whenever seen by Mr. Smith himself he has caught his turtleship and marked the year on the shell. The first one, still quite legible, is "J. A. S., 1831." The other years inscribed are 1834, 1840, 1844, 1845, 1852, 1855, 1861, 1862, 1863, 1864, 1865, 1868. So regular have been this tortoise's visits that Mr. Smith and family would suffer the loss of a real pleasure should they be intermitted.

Large Salmon in the Severn.—A large salmon was exhibited in the shop of Mr. Davis, fishmonger, of Gloucester, on Saturday, the 4th instant: it weighed when taken out of the water fifty pounds, and was caught on one of the fisheries near Berkeley: it was in fine condition, and is, I believe, the largest Severn salmon that has been caught this season.—*Edward Sweetapple; Cone Mill, Lydney, July* 14, 1868.

Is Whitebait the Young of the Herring?

[This vexed question seems to have undergone solution. Dr. Günther, than whom we have no higher authority, emphatically declares that he finds the specific characters to be the same in both: the following extracts from that admirable paper, the 'Field,' will I think be likely to be received as conclusive.—*Edward Newman.*]

The British Species of Herrings.—At the Meeting of the Zoological Society, on Thursday last, Dr. A. Günther gave a description of the

British species of herring (*Clupea*), and the distinctions between them. The fish constituting the genus Clupea are distinguished from other closely-allied groups by the following characters:—The abdomen is serrated, the serrations extending far forward towards the head. All the fins are present in every species; the lower jaw projects beyond the upper, whereas in the anchovy (*Engraulis*) and other allied forms the snout projects beyond the lower jaw. The teeth, if present, are rudimentary and deciduous, and the scales are very slightly attached.

The only British fishes of this genus recognized by Dr. Günther as being specifically distinct are:—1, the herring (*Clupea Harengus*); 2, the sprat (*C. Sprattus*); 3, the allice shad (*C. Alosa*); 4, the twaite shad (*C. Finta*); 5, the pilchard (*C. Pilchardus*).

These species are readily distinguished from each other. In the herring a vertical line, drawn down from the front of the dorsal or back fin, is in advance of the ventral fin; and there is a persistent patch of small rudimentary teeth on the vomer or central line of the upper jaw. The scales along the lateral line of the body are less than fifty in number, and, as a remarkably constant character, the number of the vertebræ is fifty-six.

In the sprat the vertical line drawn from the front of the dorsal falls on the ventral fin, both being placed equally forward. There are no teeth on the vomer, as in the herring; the scales are less than fifty along the lateral line, but the number of the vertebræ is reduced to forty-seven. These differences render the distinction between the sprat and the herring remarkably easy.

The two species known as shads were formerly confounded. They are easily distinguished from the herring and the sprat by the total absence of teeth, and by the smaller size of the scales, which are more numerous, there being from sixty to seventy along the lateral line. The allice shad is distinguished from the twaite shad by the large number of the gill-rakers, which are fine and long, and eighty to ninety in number on the outer branchial arch; whereas in the twaite shad they are short and thick, and from thirty to forty in number on the outer arch.

In the pilchard, which is also known as the sardine, there are no teeth at all. The scales are less than fifty in number, and the gill-covers are deeply furrowed. The exotic species of Clupea are very numerous, and, from their close resemblance, it is difficult to arrange them into subgenera or groups. The endeavour to classify them according to the nature and distribution of the teeth was made by

Valenciennes and others, but without success, as organs which only exist in a rudimentary condition cannot be regarded as affording a secure basis for the determination of species; hence great confusion has arisen, and numerous supposed species have been admitted into the British Fauna.

Thus the whitebait has been regarded as a distinct fish, and named Clupea alba; whereas it is in reality the young fry of the herring.

The facts on which Dr. Günther bases this conclusion are as follows:—The dorsal and ventral fins are situated as in the mature herring; the lateral scales are the same in number; there is the same arrangement of teeth on the vomer; the same number of vertebræ—namely, fifty-six, a number not found in any other clupeoid; and, finally, whatever may be the size of the whitebait, they are never taken in roe, and an adult or mature fish has never been seen.

These conclusions were generally acquiesced in by the Meeting. Henceforth, unless these opinions of Dr. Günther are proved to be based on insufficient evidence, we must regard the whitebait as herring fry.

Such being the case, the question arises whether or not it is desirable to continue their capture; for it does not follow that because they are young herrings, therefore it is a wilful waste of human food to capture them in an immature condition. Of the immense number of young produced by fish, it is obvious that only a minute fraction can arrive at maturity. Nature is prodigal of life, and the balance may possibly be so arranged that we are even increasing the number of adult fish by lessening the teeming myriads of fry, and so leaving more food and a larger scope for those that remain behind.—*From the 'Field' of June* 13.

The Whitebait and the Theories respecting it.—Since the time of Pennant, who, in the latter years of the last century, described "the lower order of epicures" as frequenting the long-shore taverns of Greenwich and Blackwall to feast upon whitebait fried with fine flour, there have been various theories propounded as to the true species of this small clupeoid fish. Pennant himself, writing when the structure of fish and the distinctions between their several families were not well known, stated that "it was impossible to class this fish with certainty;" and the editor of the edition published in 1812 described it as belonging to the Cyprinus group, or as allied to the carp family.

Shaw in his description followed the later edition of Pennant, and perpetuated this obvious mistake. Donovan, in his 'Natural History of British Fishes,' published at the beginning of the present century, treated the subject at greater length, and considered that he had obtained incontrovertible evidence that the whitebait were the young of the shad. This opinion of Donovan thus definitely announced carried the suffrages of those naturalists who did not take the trouble to investigate the question for themselves, and Turton, in his 'British Fauna,' and Dr. Fleming followed in the wake of Mr. Donovan; and this opinion was generally received until Mr. Yarrell investigated the subject, and conclusively proved that whitebait were not the fry of either species of shad. The first account of these investigations of Mr. Yarrell was published in the 'Zoological Journal' for October, 1828, and afterwards appeared in his well-known work, the 'History of British Fishes.' Since this time whitebait have been usually regarded as being specifically distinct from any other fish, and have been termed Clupea alba. Valenciennes, writing in 1846, went so far as to regard them as being more than specifically distinct, and placed them in a separate genus, which he termed Rogenia; but, as stated by Dr. Günther, the characters employed by this author in the distinction of clupeoid fish were not of definite value, and in consequence he fell into numerous errors.

Mr. Couch, the latest systematic writer on British fishes, follows Yarrell, and states:—"It was formerly supposed that the whitebait was the early stage of the growth of the Allis shad, which was then confounded with the Twait, and Donovan has represented the former for the latter. It was also supposed to be found only in the Thames, which last supposition could be regarded in no other light than as inconsistent with the former, since the shad was known to shed its spawn in several of the other rivers of England. But the belief of its being only met with in the Thames is now also known to be an error; and Dr. Parnell discovered it to be not rare in the Firth of Forth, while in the south and west it has been obtained in Devonshire and Cornwall. I have been favoured with examples from the Exe by Dr. Scott, of Exeter, and have obtained them from the Fowey, in Cornwall; and there is scarcely a doubt that if looked for they might be found in every important river in the British islands. Cuvier says they also exist in Germany; but we conclude they are limited to districts where the climate does not extend beyond the borders of moderate heat and cold. The time of spawning is supposed to be in and throughout the summer, and the very young are mingled with the more fully grown, so long as they continue to be caught in the river—a circumstance which tends to show where the roe is deposited."

Although the opinion that the whitebait is perfectly distinct from all other fish has been generally accepted by naturalists, fishermen and the public at large, there have never been wanting dissentients, and the columns of the 'Field' have from time to time contained letters from persons who have believed it to be only the fry of some well-known fish, as the common smelt, the shad or the herring. That whitebait are but herring fry has on various occasions been contended by Mr. Francis Francis. Thus, writing from Aldborough, Suffolk, in the 'Field' of January 10, 1863, he says:—"While going down the river (Alde) one day I picked up the head and shoulders of a diminutive silvery fish, which reminded me strongly of the whitebait. I showed it to the boatman: 'We calls 'em smys, sir; that's what we calls 'em. You'll see hundreds and thousands on 'em just at the back of the wave on the beach in a week or two, soon as ever the herrin' begins to show themselves, and sprats long with 'em, sir.' And sure enough, about a fortnight after, when the herrings began to show themselves, there were myriads of these little fish, just as the boatman said, at the back of the wave, just outside the wave or surf on the beach. . . . I took one up and examined it; it was unmistakably a whitebait. The boys were picking them up by dozens, so I ordered as many as could be secured to be placed in the fish-basket separately. . . . The whitebait were of all sizes, from the most diminutive specimens seen on the table at Blackwall, up to six inches long. The largest were about six inches, the smallest barely an inch. . . . Yarrell speaks of the largest whitebait he has ever seen as six inches in length. That is about the length of the two largest specimens which I obtained. He further says that the sprat-fishers take the *adult* whitebait on the Kentish and Essex coasts frequently during the winter. As regards the adult fish, I opened the two largest I got and examined them very closely, but could detect no traces of either roe or milt. I confess that I should much like to *see* an adult whitebait; for Yarrell is so sound an authority, that it is not safe to doubt him, though he is certainly less clear upon the whitebait than he usually is. He certainly speaks of the largest fish he ever saw as six inches long; and mine are six inches long, but certainly not adult fish."

And again, in the 'Field' of February 13, 1864, he says:—"As regards the distinctive species of the whitebait, I believe I had the honour of shaking my friend 'The Chronicler's' mind first upon this point. Yarrell makes a strong case of it, and although I would not be bold enough to question so high an authority, I should, I must confess, like to see a mature female whitebait in spawn. Indeed, I would gladly give a sovereign for one. I have the whitebait as sold in the London market, and I have a fish so much resembling the whitebait that to the eye no difference can be detected; and I have this fish of all sizes, from whitebait size, *i. e.*, one and a half or two inches long, to three and four inches long, and so on to five and six inches long, and so up to a full-grown herring, and the chain appears to me (at any rate to the eye) so complete that I confess I cannot detect the difference."

In the 'Field' of May 11, 1864, "The Chronicler" stated that the Fish and Oyster Breeding Company had secured several marine ponds at Southend, one of which, he said, "will be set aside for whitebait, and it is to be hoped that this will have the effect of solving the oft-mooted problem, of what fish is the whitebait the fry? Surely, after a year's confinement, the rival claims of the herring and the shad to the parentage of this piscatorial morsel will be decided upon." I am not aware, however, that anything was actually done in the matter; but, had the experiment been tried, it would most probably have resulted in failure. If the fish had been shut off from the sea they would have been starved, from the absence of their natural food; and had the communication been kept open other fish would have gained access to the pond, and the accuracy of the experiment would have been destroyed.

During the past year, as stated last week, Dr. A. Günther has been engaged in the distinctions between the different species of Clupea, and the result of his investigations has been published in the seventh volume of the 'Catalogue of Fishes' in the British Museum. Dr. Günther finds that in every detail of structure the herring and the so-called whitebait correspond; they have the same number of vertebræ, the same number of scales along the lateral line, the same arrangement of teeth on the vomer, and the same position of the fins and number of the fin-rays—conjoined characters which are found in no other fish. Dr. Günther writes:—"As regards the 'whitebait,' this is a purely nominal species introduced into Science by Yarrell and Valenciennes, in deference to the opinion of fishermen and gourmands. All the examples of whitebait I have examined are young herrings."

The positive determination of the identity of the whitebait and of the herring throws light upon many of the singularities of the smaller fish. Formerly the whitebait were regarded as peculiar to the Thames; it is now known that they are to be captured, in greater or smaller numbers, in all rivers whose estuaries are frequented by mature herrings. Dr. Parnell, in his 'History of the Fishes of the Forth,' published in the seventh volume of 'Memoirs of the Wernerian Society,' states:—"The whitebait is not, as it was formerly considered to be, peculiar to the Thames, as I have found it to inhabit the Frith of Forth in considerable numbers during the summer months. From the beginning of July to the end of September they are found in great abundance in the neighbourhood of Queensferry, and opposite Hopetown House, where I captured in one dip of a net, of about a foot and a half square, between two and three hundred fish, the greater part of which were whitebait of small size, not more than two inches in length. . . In their habits they appear to be similar to the young of the herring, always keeping in shoals, and swimming occasionally near the surface of the water, where they often fall a prey to aquatic birds."

The question as to the effect of the capture of whitebait on the numbers of the mature animals is one which will suggest itself to most readers. It does not necessarily follow that because whitebait are young herrings, therefore it is injurious to our herring fisheries to capture them. The number of eggs deposited by a single herring is enormous. Of these only two or three can arrive at maturity—the rest must fall a prey to their numerous enemies; and the utmost destruction effected by man, with small nets a few feet square moored in the water of a broad river or estuary, can have but little influence as compared with the destruction by piscivorous fishes and fish-eating birds.

The present fashion of wearing bird-skins and plumes in hats has led to the wholesale slaughter of gulls and other water-fowl, so that at present scarcely one is visible in places where they formerly abounded. It is not improbable that this destruction of their enemies may have saved the lives of millions of young fry, and that the power of man has not equalled that of the birds he has destroyed. But be the bearing of the subject what it may, it is always desirable that the truth should be known, and I am therefore well pleased to think that the matter may be regarded as definitely settled.

W. B. TEGETMEIER.

PS.—In order to render the distinctions between the British species of Clupea more evident, I append a table of the differences, compiled from Dr. Günther's catalogue.

Table of the Distinctions between the British Species of Clupea.

Herring (*Whitebait*).—Teeth on the vomer, or central line of upper jaw. Scales along lateral line less than 50. Dorsal fin in advance of ventral. Vertebræ 56.

Sprat.—No teeth on the vomer. Scales less than 50. Dorsal and ventral fins even. Vertebræ 47.

Allice Shad.—No teeth at all. Scales more than 50. 70 to 80 gillrakers on great branchial arch.

Twaite Shad.—No teeth at all. Scales more than 50. 30 to 40 gillrakers.

Pilchard (*Sardine*).—No teeth at all. Scales less than 50. Gill-cover deeply furrowed.—*From the 'Field' of June* 20.

Notes on Aphides. By FRANCIS WALKER, Esq., F.L.S.

(Continued from S. S. 1301.)

Tribe 2. LACHNINÆ, *Passerini*.

A. Sixth joint of the antennæ setaceous. . . . 1. SIPHA.
AA. Sixth joint of the antennæ filiform or clavate, often terminating in a spur like a rudimentary joint.
  A. Fourth vein of the fore wings nearly straight; stigma linear. 2. LACHNUS.
  AA. Fourth vein of the fore wings curved; stigma trapezoidal.
    A. Abdomen bare.
      a. Rostrum short, not extending to the middle legs. . 3. CALLIPTERUS.
      aa. Rostrum more or less long, extending at least to the hind legs. . . . . . . 4. PTEROCHLORUS.
    AA. Abdomen woolly. . . . . . .

Genus 1. SIPHA, *Passerini*.

Antennæ short, six-jointed, slightly pilose-setose; third and setaceous sixth joint longer than the others. Nectaries tubercle-shaped.

Typical species, *Aphis Glyceriæ*, Kaltenbach.

A. Abdomen green, with a paler dorsal longitudinal line. . 1. *Glyceriæ*.
AA. Abdomen brown and shining above, rusty brown beneath. . 2. *Maydis*.

Genus 2. LACHNUS, *Illiger*.

Antennæ six-jointed, smooth, much shorter than the body. Nectaries tubercle-shaped. Tail not visible. Fore wings with the cubital vein twice-forked; fourth vein almost straight.

Typical species, *L. Pinicola*, Kaltenbach.

- A. Abdomen with a conical tubercle between the nectaries. . 1. *Viminalis.*
- AA. Abdomen with no tubercle between the nectaries.
  - *A.* Rostrum shorter than the body.
    - A. Viviparous apterous female smooth, oblong-elliptical. . 2. *Pinicola.*
    - AA. Viviparous apterous female pubescent, nearly globose. . 3. *Juniperi.*
  - *AA.* Rostrum at least twice longer than the body.
    - A. Viviparous apterous female brown, shining. Fifth joint of the antennæ as long as the fourth and shorter than the sixth. . . . . 4. *Quercus.*
    - AA. Viviparous apterous female cinereous-powdered. Fifth joint of the antennæ longer than the fourth and than the sixth. . . . . 5. *longirostris.*

Genus 3. CALLIPTERUS, *Koch*.

Rostrum very short. Fore wings with the fourth vein curved; stigma trapezoidal. In other characters like Lachnus.

Typical species, *Aphis Juglandis*, Frisch.

- A. Abdomen with black dorsal spots. Veins of the fore wings broadly brown-bordered at the tips. . . . . . 1. *Juglandis.*
- AA. Abdomen luteous, not spotted. Veins of the fore wings not bordered. . . . . 2. *Juglandicola.*

Genus 4. PTEROCHLORUS, *Rondani*.

Rostrum long, not extending beyond the body. Fore wings with the fourth vein curved; stigma trapezoidal. In other characters like Lachnus.

Typical species, *Aphis longipes*, Léon Dufour.

Genus 5. PHYLLAPHIS, *Koch*.

Body woolly. In other characters like *Callipterus*.

Aphis Fagi, Linn.

Tribe 3. PEMPHIGINÆ, *Passerini*.

A. Cubital vein forked at the tip. . . . . . 1. SCHIZONEURA.
AA. Cubital vein simple.
A. Hind wings with two oblique veins. . . . 2. PEMPHIGUS.
AA. Hind wings with one oblique vein.
A. Wings deflexed. . . . . 3. TETRANEURA.
AA. Wings horizontal. . . . . . 4. APLONEURA.

Genus 1. SCHIZONEURA, *Hartig*.

Antennæ six-jointed. Nectaries none or rudimentary. Wings deflexed. Fore wings with four oblique veins; cubital vein once-forked. Hind wings with two oblique veins.

Typical species, *Aphis Corni*, Linn.

A. Antennæ pilose; third joint shorter than the three following joints together.
A. Abdomen with a black somewhat round dorsal spot, and with black marginal points. . . . . . 1. *venusta*.
AA. Abdomen black above, with a whitish line at the base and with a whitish tip. . . . . . . 2. *Corni*.
AA. Antennæ scabrous, not pilose; third joint longer than the three following joints together.
A. Antennæ with the fourth and fifth joints of equal length; sixth shorter than the fifth.
A. Abdomen wrapped with long and thick wool. . . 3. *lanigera*.
AA. Abdomen slightly woolly or nearly bare. . . . 4. *lanuginosa*.
AA. Fourth joint of the antennæ longer than the fifth; sixth as long as the fifth. . . . . 5. *Ulmi*.

Genus 2. PEMPHIGUS, *Hartig*.

Antennæ six-jointed. Fore wings with four simple oblique veins. Hind wings with two oblique veins.

Typical species, *Aphis bursaria*, Linn.

A. Oblique veins of hind wings proceeding separately from the submarginal line.
A. Sixth joint of the antennæ as long or longer than the fifth.
A. Veins of the fore wings pale slender; first and second oblique veins joined together at the base.
a. Sixth joint of the antennæ as long as the fifth or scarcely longer. First and second oblique veins very short, joined together at the base. . . . . 1. *utricularius*.
aa. Sixth joint of the antennæ at least twice the length of the fifth. First and second oblique veins of the fore wings joined together for a long space from the base. 2. *cornicularius*.

AA. Veins of the fore wings brown, rather stout; first and second oblique veins wholly separate from each other.
a. Sixth joint of the antennæ longest. . . . 3. *semilunarius.*
* Third joint of the antennæ longest; fourth, fifth and sixth of equal length.
† Third joint of the antennæ shorter than the fourth and fifth together. Abdomen bare. . . 4. *follicularius.*
†† Third joint of the antennæ as long as the fourth and fifth together. Abdomen woolly. . . 5. *filaginis.*
AA. Sixth joint of the antennæ shorter than the fifth.
A. Third and fifth joints of the antennæ of equal length. Abdomen bare. . . . . . . 6. *Boyeri.*
AA. Third joint of the antennæ longer than the fifth. Abdomen woolly. . . . . 7. *cærulescens.*
AA. Oblique veins of the hind wings proceeding connectedly from the submarginal vein.
A. Sixth joint of the antennæ as long as the fifth. . . 8. *affinis.*
AA. Sixth joint of the antennæ longer than the fifth.
A. Fifth joint of the antennæ almost twice longer than the fourth.
a. Joints of the antennæ smooth. Hind side of the stigma not angular. . . . . . . 9. *Coluteæ.*
aa. Joints of the antennæ ringed. Hind side of the stigma angular. . . . . 10. *bursarius.*
AA. Fourth and fifth joints of the antennæ nearly equal in length.
a. Hind side of the stigma not angular. . . 11. *Spyrathecæ.*
aa. Stigma angular at the base of the fourth vein.
* Abdomen bare. . . . . . 12. *vesicarius.*
** Abdomen woolly. . . . . 13. *lactucarius.*

Genus 3. TETRANEURA, *Hartig.*

Antennæ short, six-jointed; third joint longer than any of the others. Wings deflexed. Fore wings with four simple oblique veins. Hind wings with one oblique vein.

Type, *Aphis Ulmi*, Geoffr.

Genus 4. APLONEURA, *Passerini.*

Antennæ with the sixth joint longer than any of the others. Wings horizontal. In other characters like Tetraneura.

Type, *Tetraneura Lentisci*, Passerini.

Tribe 4. RHIZOBIINÆ, *Passerini.*

A. Third joint of the antennæ much longer than the fourth. . 1. FORDA.
AA. Third and fourth joints of the antennæ nearly equal in length. 2. RHIZOBIUS.

Genus 1. FORDA, *Heyden*.

Antennæ six-jointed; third joint much longer than the fourth; sixth very short. Abdomen convex; no nectaries nor tail. Tarsi with two apical claws.

Type, *F. formicaria*, Heyden.

Genus 2. RHIZOBIUS, *Burmeister*.

Antennæ six-jointed; joints from the first to the sixth nearly equal in length. No nectaries nor tail. Tarsi with one apical claw.

Type, *R. Sonchi*, Passerini.

A. Sixth joint of the antennæ subclavate, longer than the fifth. . 1. *Sonchi*.
AA. Joints of the antennæ nearly equal in length. . . 2. *Menthæ*.

Tribe 5. TYCHEINÆ, *Passerini*.

Genus 1. TYCHEA, *Koch*.

Antennæ five-jointed, very short. Abdomen with a rim; no nectaries nor tail. Legs very short; tarsi with two apical claws.

A. Joints of the antennæ nearly equal in length.
  A. Body smooth. . . . . 1. *Eragrostidis*.
  AA. Body pulverulent, setulose. . . . . . 2. *setulosa*.
AA. Joints of the antennæ various in length.
  A. Second and third joints of the antennæ nearly equal in length; fifth longer than any of the others. . . . . 3. *Phaseoli*.
  AA. Third joint of the antennæ longer than any of the others.
    A. Body pearly white, pubescent. . . . . . 4. *Setariæ*.
    AA. Body luteous or orange, smooth. . . . . . 5. *trivialis*.

Tribe 6. CHERMESINÆ, *Passerini*.

A. Antennæ five-jointed.
  A. Fore wings with four oblique veins, the cubital forked. . 1. VACUNA.
  AA. Fore wings with three oblique simple veins. . . 2. CHERMES.
AA. Antennæ three-jointed. . . . . 3. PHYLLOXERA.

Genus 1. VACUNA.

Antennæ short, five-jointed; third joint longer than the others. Wings horizontal. Fore wings with four oblique veins; the cubital vein forked. Hind wings with one oblique vein.

Typical species, *Aphis dryophila*, Schrank.

A. Dorsum brown or green, with a pale stripe. . . . 1. *dryophila*.
AA. Dorsum greenish brown, with a white stripe and with white marginal spots. . . . . 2. *Alni*.

Genus 2. CHERMES, *Linn.*

Antennæ five-jointed, very short. Wings deflexed. Fore wings with three oblique simple veins. Hind wings with one oblique vein, which is often evanescent.

C. Abietis, Linn.

Genus 3. PHYLLOXERA, *Fonscolombe.*

Antennæ three-jointed. Wings horizontal. Fore wings with three oblique simple veins. Hind wings with no oblique veins.

P. coccinea, Heyden.

(To be continued.)

PROCEEDINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY.

July 6, 1868.—H. W. BATES, Esq., President, in the chair.

Additions to the Library.

The following donations were announced, and thanks voted to the donors:—'Proceedings of the Royal Society,' Nos. 101 and 102; presented by the Society. 'Journal of the Linnean Society,' Zoology, No. 41; by the Society. 'Proceedings of the Zoological Society,' 1867, Part 3; by the Society. Hewitson's 'Exotic Butterflies,' part 67; by W. W. Saunders, Esq. Newman's 'British Moths,' No. 19; by the Author. 'The Zoologist' for July; by the Editor. 'The Entomologist's Monthly Magazine,' for July; by the Editors.

The following additions, by purchase, were also announced:—Panzer, 'Faunæ Insectorum Germanicæ Initia.' Sturm, 'Deutschland's Fauna, Käfer;' vols. 9—22. 'Berliner Entomologische Zeitschrift,' 1857—67.

Exhibitions, &c.

Mr. M'Lachlan mentioned that, out of twenty-one pupæ of Hypercallia Christierninana, he had bred nineteen of the perfect insect, and exhibited a dozen of them. The pupæ soon lost the beautiful bright green colour (Zool. S. S. 1303), became for a time pale dirty yellow or colourless, and finally assumed a rosy hue as the wings of the imago made progress towards their full development.

Mr. H. J. S. Pryer exhibited a specimen of Halias quercana, from West Wickham, with the wings unequally developed, one side being much shorter than the other.

Mr. Bond exhibited varieties of Setina irrorella and Arctia villica: the former was captured near Croydon; its colour was pale, the ordinary rows of dots were very indistinct, but there was a dark basal longitudinal mark, and a strong subapical dark fascia: the latter was bred from one of a number of larvæ found at Wormwood Scrubs, all of which were similarly treated, and, whilst the rest produced moths of the ordinary type, the specimen exhibited was almost entirely of a deep rich fulvous colour, with a few black marks on the costa of the fore wings, and but for its origin being known could scarcely have been recognized as Arctia villica.

Mr. R. Davis, of Waltham Cross, Herts (who was present as a visitor) exhibited a large collection of larvæ of Lepidoptera, admirably dried and preserved, and expressed his desire to receive living larvæ from Lepidopterists in other parts of the country, a portion of which, when preserved, he would return to the sender.

Mr. T. W. Wood (who was present as a visitor) exhibited specimens and drawings of several exotic species of Saturniidæ, and made some observations on their habits. Saturnia Cynthia was remarkable for its attitude during repose, the wings being held perfectly horizontal, without any external support, and widely expanded, the hind wings being an inch or more apart. The attitude of S. Promethea and S. Cecropia was very similar to that of a Papilio, and there were other strongly-marked points of resemblance between the Saturniidæ and Papilionidæ, both in form and habits; for instance, the gentle waving up and down of the wings, as if for display, as observed in these moths, was more characteristic of diurnal than of nocturnal Lepidoptera: he had kept a pair of S. Polyphemus alive for a considerable time, and found that they sometimes (particularly the female) rested after the manner of butterflies, but at other times their wings were horizontal, a large portion of the hind wings, including the ocellus, being hidden by the fore wings. Mr. Wood had also observed that these insects possess a moveable appendage on the under side of the anterior tibiæ, which is used as a comb for cleaning the antennæ: he had many times seen the males of S. Promethea use these appendages for that purpose; the large feathery antenna was clasped at the base between the tibia and the comb, as between a finger and thumb, and was drawn slowly through to the tip, being thereby effectually cleared of all dust and scales or other foreign matters.

Prof. Westwood said that there was a similar appendage or plate on the fore tibiæ of Papilio Machaon.

Mr. A. G. Butler (who was present as a visitor) exhibited Halia Wavaria and its Dipterous parasite, a species of Tachina, bred from the pupæ.

Mr. Bond, after referring to the cases recorded in Proc. Ent. Soc. 1865, pp. 103, 104, of several males of Œceticus and Micropteryx being discovered in simultaneous sexual contact with one female of their own species, mentioned that Dr. Knaggs had met with a still more remarkable case, inasmuch as he had found a male of Tortrix viridana and a male of T. heparana in contemporaneous union with a female of T. viridana.

Mr. Bond then exhibited a female of Drilus flavescens,—the third known British specimen of that sex (Zool. S. S. 1137),—and two males of the same species, the trio having been captured *in copulâ simultaneâ* near Freshwater, Isle of Wight, on the 12th of June, 1868, by Mr. H. Rogers, who had supplied the following account:—

"I captured them on Friday, June 12th, at a place called Blackbridge, Freshwater: they were on the high road, and first attracted my attention through the female crawling along and dragging both males behind her. I picked them up and closely examined them, and both males were *in cop.* with her at the same time, and remained so for upwards of two hours; both left her within ten minutes of each other. When I first saw them the males were quite helpless."

Mr. J. Jenner Weir exhibited a fine large Monochamus, which had flown into and been captured in the London Custom House a few days previously.

Mr. Blackmore exhibited a collection of insects of all orders, captured in Tangier in March and April, 1868. The greater part consisted of Coleoptera, in which Tangier was very rich: during three years Mr. Rolfe had collected there 2700 species, two-thirds of which had not previously been taken in Morocco, and of these a large proportion were new to Science.

The Secretary read Reports, dated 2nd December, 1867, 4th January and 22nd April, 1868, by Dr. Bidie, the Government Commissioner for investigating the ravages of the borer (*Xylotrechus quadripes* of Chevrolat) in the coffee-plantations of Mysore and Coorg. (See Tr. Ent. Soc. 1868, p. 105; Proc. 1867, p. cix., 1868, pp. ii., xviii.) The following are extracts:—

"In the neighbourhood of Mercara, my attention was directed to another insect called the Ringer: it chiefly attacks young plants, and lives in the ground at the foot of the stem, coming up during the night and feeding on the bark. When a complete circle of bark is thus destroyed, the whole of the plant above that point dies, but the root throws up shoots which in time become productive. The Ringer seems identical with the black grub of the Ceylon plantations, which is the larva of the Dart Moth. I have failed to get the grub to pass into the imago state, the shaking during my travels having always proved fatal to it, but am quite sure that it is identical with the English Agrotis segetum.

"In a native garden in Veerajpettah I found twenty-year old stems in which the borer had been observed at work for five years at least, and various Coorgs have informed me that they have noticed the borer occasionally during the last eight or ten years. Two gentlemen engaged in planting have also told me that they now and again found the borer in coffee trees upwards of four years ago. In many of the native gardens I find that some Rodent (probably the coffee rat) has begun to destroy the pupa and beetle, by cutting down and extracting them for food. Red ants also to a small extent prey on the larva and pupa.

"I am now trying to discover whether the white borer did or does exist in indigenous trees.

"In Southern Coorg I have inspected thirty-eight estates belonging to Europeans, and a large number the property of natives. The effect of forest clearance on climate and its bearing on the immediate matter of my enquiry have received due attention. I quite agree that the destruction of forests in Coorg has had an influence in making the borer so prevalent and destructive to coffee. In other countries, such as America, as the clearing of the natural forests has gone on, insects destructive to trees and crops have vastly increased in numbers. In dense primeval woods, the conditions of light, heat and moisture are not favourable for the production of many of the insects injurious to cultivated plants; and besides Nature in such situations maintains enemies sufficient to keep them in check. When man comes in with his axe he disturbs this natural balance, and his fields and gardens suffer in consequence. No doubt also insects often attack cultivated plants when natural ones on which they used to subsist have been exterminated. Forest clearance would also seem to increase the number of many kinds of insects by producing various changes in local climate conducive to their multiplication. The Coorgs think that the borer used to live in the bamboo, but, owing to the death of that tree throughout the district during the past year, it was no longer able to subsist in it, and has therefore attacked the coffee. This general dying out of the bamboo, they say, occurs once in sixty years—that being the term of its existence; but it seems strange that all the bamboos in Coorg should be so exactly of the same age as to perish in a single year. I am investigating these statements, however, and will soon be in a position to say positively whether or not they are founded on fact. Some think that the borer has increased from the destruction or departure of insect-eating birds, consequent on the cutting down of forest. Any one accustomed to jungle life knows that very few birds exist in dense forest, and that if not disturbed they rapidly increase wherever there is a clearing under cultivation. The comparative scarcity of birds in Coorg is doubtless caused by the great amount of dense forest that exists, the severity of the monsoon, and the destructive propensities of the Coorgs.

"In various jungle trees and in the orange I have found larvæ which in appearance and mode of tunnelling have a strong resemblance to the coffee-borers, but, as a rule, they differ from them in preferring dead to living wood. These and the coffee-borers are all the larvæ of beetles or of moths. The white coffee-borer (now so destructive) appears to belong to the genus Clytus.

"Since my last Report, I have found in coffee on native estates growing under shade a small beetle belonging to the genus Tomicus, which bores the young primaries and secondaries, causing them to turn black and perish. The perfect insect is only about the size of a pin's head, and yet it does a great deal of damage to the young fruit-bearing wood. I have also seen on some estates a locust very destructive to the foliage of the coffee, and thus causing a considerable loss in crop.

"The discovery of measures to destroy or prevent the appearance of the borer has of course formed the chief object of my solicitude, and although the peculiarities of its natural history are such as to throw serious obstacles in the way, still I hope to attain ultimately some measure of success. The fact of the insect being found in the perfect form in every month of the year nearly precludes the idea of being able to destroy it in the winged state; and the circumstance of its living as a grub and pupa in the interior of the stem renders it very difficult to attack it in either of these stages without destroying the tree. In the mean time I would recommend the covering of the stems of the plants with clean fresh moss up to the terminal pair of primaries from the surface of the ground. The moss should be about two inches in thickness and secured with several bands of fibre, and if put on about the beginning of the monsoon will live and become firmly banded round the stem in a short period, forming a mechanical barrier that would prevent the beetle from reaching the bark to deposit its eggs. The mossing would no doubt to some slight extent affect the health of the tree, but this would be largely compensated for by the protection that it would afford from so deadly an enemy as the borer. I believe, too, that although the eggs of the borer were deposited under the moss, its presence would prevent them from hatching. The manner of applying the moss here proposed is exactly the same as that recommended by Mr. M'Ivor for the cinchonas, to increase the amount of alkaloids in their bark. Coal-tar, pure or diluted with fish-oil, applied to the stems will also have the effect of keeping away the beetles, its smell being most offensive to all insects. I lately saw some trees to which tar had been applied nine months ago, and although exposed to the monsoon the coating had not lost its odour, and the trees looked very vigorous. I mention these facts because it has been said that the tar soon loses its smell, and is also fatal to the coffee-tree. Lime-wash has been used on some estates, but the great objections to its use are that it is washed away by the first showers and scales off when the tree is shaken by the wind. I believe a mixture of cow-dung and clay, like that used by the natives for the walls and floors of their houses, would be more permanent and perhaps as effectual, while it would be much cheaper.

"The coffee crop has turned out better than was anticipated, and this agreeable surprise has led most planters to take a much more hopeful view of the future. I am happy to report, too, that the borer does not seem to be on the increase in South Coorg, but rather on the decline, as in most bored trees about five per cent. of the insects found are dead. Still it is very difficult to arrive at a satisfactory conclusion as to the state of the pest at present, as the insect is for the most part in the winged state and not easily seen, and it is only as the dry weather begins to tell on the trees that those tunnelled will show symptoms of the injury they have sustained. The Rodent alluded to in my last continues to prey on the insect, cutting a hole in the wood so as to reach its tunnel. It does not appear, however, to frequent estates of large extent and free exposure, but to live in native gardens of limited size, in which there is some shade and abundance of cover in the shape of under growth."

"There is a very destructive insect called by planters the charcoal borer, as it frequently destroys the charcoal trees which are reared to give shade to the coffee. Its presence in a tree is indicated by a lump on the stem of sawdust-like wood-powder, matted together by silky fibres. On removing this the hole through which the insect enters and ejects the morsels of wood will be seen, and it is generally large enough to admit the tip of the little finger. If the tree be now cut down and split open, tunnels of the same size will be found running upwards and downwards from the external opening, and the grub lying snug in the bottom of a burrow at the base of the stem. The larva is from three to four inches long, thick, fleshy, and of a pale red colour. It has six pectoral, eight ventral and two anal feet, and is a very powerful creature, struggling violently in the hand, and attacking vigorously with its powerful jaws the cork of a bottle in which it may be confined. The chrysalis is smaller and of a darker red colour than the caterpillar, and rests about three months. Its abdominal segments are furnished with transverse rows of minute reflexed spines, and some weeks before the moth emerges, moved by some wonderful instinct, it pushes itself up by means of these, and clears away the *débris* of the wood from the external opening, so that there may be nothing to prevent the escape of the perfect insect. Having completed this task it once more descends to its former place, and rests until the moth arrives at maturity, when the same contrivance is made use of again to enable the moth to escape from the tunnel, within which it could never wriggle out of its case or develope its wings. The moth measures about three and a half inches across the upper pair of wings, which are much larger than the lower. Both pairs are of a grayish brown colour, and the upper ones are clouded with brown. The antennæ of the female (I have not seen a male) are very short and filiform. The wings are deflexed in repose, and furnished with a complicated series of strong nerves. The abdomen is elongated, and the female, when touched, discharges with considerable force immense numbers of minute white round eggs, which shortly turn black, when they have the appearance of very fine gunpowder. This moth belongs to the family Hepialidæ, and is closely allied to the Hepialus humuli, or ghost moth of England. It is very common in the charcoal tree, and renders the stem so weak by its tunnelling that it is apt to be broken by the wind. In the monsoon, too, the rain enters by the exterior opening, gets to the heart of the tree and causes it to rot. The larva may be killed by passing a flexible wire into its burrow, and after this the hole should be closed with a soft wooden peg.

"There is not a tree in our forests but is liable when dead to the attacks of boring insects, and many in the living state, more especially if sickly, show traces of their depredations. As regards the coffee-plant, any diminution of vigour in it, no matter what the cause, renders it liable to the ravages of the borer, and the larva does not find a suitable field in a vigorous and absolutely healthy plant. There seems no reason to doubt, therefore, that one cause of the great prevalence of the borer of late years has been a general want of vigour in the plants. At the same time it must be stated that a vast majority of the trees that have died full of the borer's tunnels would, but for its ravages, have lived and might have been restored to a more healthy state. The causes that produced this sickly condition were various, and some of them must have been very general, seeing that the borer has prevailed over such an extent of country. Not only in the actual coffee districts, but in places at a considerable distance from them—such as Hassan and Hoonsoor—I have found the borer present in coffee trees; occurrences that point to the reduction of vigour having been caused in part by some climatic influence. From this and other facts I also infer, that the borer beetle is a widely distributed insect, and indigenous to the country, as the distance of the stations of Hoonsoor and Hassan from estates infested with the borer, and the open nature of the intervening country, preclude the idea of its having been able to wing its way from the latter to the former. I cannot believe either that the ova of this beetle could have been carried so far by man's or any natural agency. Concluding then that the borer beetle belongs to the insect Fauna of Southern India, and is widely distributed, it can hardly be expected that it will ever disappear, and although more favourable seasons and change of mode of cultivation may render coffee in general less liable to, or proof against, its attacks, still it will ever be ready to prey upon and destroy sickly plants. During a recent visit to the gardens on the Baba-Booden, in which coffee was first cultivated in Southern India, I was informed by the planter Ghaus Sha-Khadry that 'he had known the borer there for thirty years.' On an estate in Nugur, too, in 1860, or eight years ago, no less than 60,000 plants were destroyed by the borer. These facts also go to prove that the insect is an old and permanent resident in the coffee districts of the Peninsula. When at Ghaus Sha-Khadry's plantations I saw coffee-plants growing in shade, seventy years old, and quite healthy, and was told that about twelve years ago there were plots of coffee in the open, the trees in which were one hundred years old. These have all since gradually died out, and the owner attributes their death to extreme age, drought and borer. He says that for twelve years back the seasons have gradually been getting drier and hotter, until at the present time the climate is such as to render it impossible to grow coffee trees in the open in that part of the country: there is much collateral evidence to support this statement regarding gradual deterioration of climate all along these Western Ghauts.

"I have visited the chief estates in Munzerabad, and a few of the oldest and most interesting in Nugur. In both these districts, all the planters I have seen are of opinion that coffee must in that quarter be cultivated under shade, trees in the open being liable to perish from the violence of the monsoon, drought, borer, &c. The most of the estates therefore are under shade, and as those so protected have suffered but little from the borer as compared with the few in the open, I went over them with great interest. The degree of shade is a point of great nicety and importance, too much being prejudicial to the reproductive powers of the tree, and too little exposing it to the effects of drought and the attacks of the borer. The native cultivators were the first to adopt this system, and there seems no doubt that they were led to do so by experience. It is worthy of note, too, that the first English coffee planters in Southern India followed their example, and that some of their estates, varying in age from twenty-five to forty years, still yield large and certain returns to the owners. On the whole, I entertain a very high opinion of the system of culture under shade, and think it might be introduced with advantage in many parts of Coorg."

Mr. M'Lachlan mentioned that the terrestrial Trichopterous larvæ exhibited at the previous Meeting (Zool. S. S. 1303), from which he had hoped to breed Enœcyla pusilla, had unfortunately perished.

Mr. A. E. Eaton exhibited numerous drawings and microscopical preparations of the mouth and other parts of Cænis, Leptophlebia, Ephemerella and Oligoneuria—with reference to the paper mentioned below.

Prof. Westwood exhibited two remarkable forms of Chalcididæ, one from the Amazons, the other from Australia, both belonging to the Cleonymus group, and possessing peculiar modifications and elongation of the abdominal segments, whereby doubtless oviposition was facilitated. He proposed to describe each of them as the type of a new genus.

Mr. F. Smith exhibited two female specimens of Ophion macrurus (Drury, Exot. Ins. i. pl. xliii. fig. 5), bred by Mr. Chapman, of Glasgow, from cocoons of Saturnia Cynthia, which he had received from Mr. Angus, of New York. The specimens were alive when they reached Mr. Smith, and one of them stung him in the hand so severely as to lead to the belief that poison was injected, but fortunately the pain was not lasting. There were specimens of this Ichneumon in the British Museum from New York, with a memorandum by Edward Doubleday "parasitic on Bombyx Cecropia," a North American species: if there were no mistake as to the species from which the exhibited insects were bred, it was remarkable that the Asiatic Bombyx Cynthia should, so soon after its introduction into America, have been attacked by the parasite of its congener B. Cecropia.

Mr. F. Moore did not consider that these parasites were restricted to a single species. There was no doubt of the true Bombyx Cynthia having been introduced into America; and he had himself bred the same species of Ophion from B. Cynthia and B. Polyphemus.

The Secretary exhibited a spring wooden letter-clip, in the cavity between the limbs of which was placed the nest of a wasp, probably an Odynerus. This was found in June, in Hants, in a box which lay open on a writing-table which was in constant use, though the clip had remained untouched; and was communicated by Sir J. Clarke Jervoise, Bart., M.P.

The Secretary mentioned that petroleum oil, especially in the crude state, had in France been found of great use in destroying insects: the petroleum was mixed with water, in the proportion of an ounce to half an ounce to a pint of water, but when applied to fruit trees or delicate plants the quantity of oil was still less: a very weak solution applied with a watering-pot, was said to be very efficacious against the larvæ of the cockchaffer; and a strong solution, poured into the holes and down walls infested by insects, was said to kill them rapidly. Another application of the solution was to rid dogs and other animals of parasites; but the parts must be rubbed with soap a few minutes after the solution was applied.

Papers read.

The following papers were read:—

"Descriptions of new Genera and Species of Heteromera" (conclusion); by Mr. F. Bates.

"On the Larva of Micropeplus Staphylinoides;" by Sir John Lubbock, Bart.

"On some points in the Anatomy of the immature Cænis macrura of Stephens;" by Mr. A. E. Eaton.

"A Tabular Comparison of some Representative Species of Diurnal Lepidoptera in Europe, India and North America;" by Mr. W. F. Kirby.

"In my paper on the geographical distribution of European Rhopalocera (Tr. Ent. Soc. 3rd series, i. 481), I did not attempt any generalizations from the results arrived at. It now appears to me that a Table showing the species common to Europe and India, or North America, may be useful, with reference to the claims of representative forms to be considered distinct. In some cases, as in Papilio Zelicaon, a named representative is now allowed to be a variety; in others, as in Pyrameis Callirrhoe, it is considered as indubitably a species. But my object is simply to start inquiry; I leave to others the decision of specific claims. A great number of European species range through North Asia (those common to Europe and North Asia are indicated in the Table by an asterisk), and I think it highly probable that many or most of these will ultimately be found to extend to the north slope of the Himalayas. The absence of continuous mountain chains running north and south will account for their wide distribution over Europe and North Asia. The South Indian Fauna is still very imperfectly known, but it is probably more African or Australian in character, and much poorer in species, than that of the North. My authorities for North Asia are Ménétries and Bremer; for India, Horsfield and Moore's Catalogue, and subsequent papers by Mr. Moore; and for America, Morris's Synopsis, published by the Smithsonian Institution. The letters N, S, E, W denote the points of the compass: H in the Indian column indicates a Himalayan species.

EUROPE.	INDIA.	NORTH AMERICA.
*Papilio Machaon	P. Machaon (H)	P. Zelicaon (W)
*Pieris Brassicæ	P. Nipalensis (N)	
„ Krueperi	P. Gliciriæ	
* „ Rapæ	P. Rapæ (N)	P. Cruciferarum
* „ Callidice	P. Kalora (H)	P. Callidice? (W)
* „ Daplidice	P. Daplidice (N)	
Anthocharis Belia		A. Belia (W)
* „ Tagis	A. Daphalis (H)	
*Colias Pelidne (N)		C. Pelidne (N)
* „ Nastes (N)		C. Nastes (N)

EUROPE.	INDIA.	NORTH AMERICA.
Colias Phicomone		C. Phicomone
* „ Hyale	C. Hyale	C. Hyale
* „ Erate	C. Erate (N)	
* „ Chrysotheme (E)		C. Eurytheme
„ Hecla (N)		C. Hecla ? (N)
„ Myrmidone (N)	C. Myrmidone? (H)	
* „ Edusa	C. Fieldii (H)	C. Amphidusa (W)
*Gonepteryx Rhamni	G. Nipalensis (H)	G. Rhamni (W)
Danais Chrysippus (E)	D. Chrysippus	
*Argynnis Aphirape		A. Aphirape (N)
* „ Freya (N)		A. Freya (N)
* „ Polaris (N)		A. Polaris (N)
„ Chariclea (N)		A. Chariclea (N)
„ Lathonia	A. Issæa (N)	
* „ Aglaia		A. Aglaia
* „ Selene		A. Myrina
„ Frigga (N)		A. Frigga (N)
*Grapta C-album		G. Comma
*Vanessa Xanthomelas	V. Xanthomelas (H)	
* „ V-album		V. J-album
* „ Urticæ	V. Kaschmirensis (N)	V. Milberti
* „ Antiopa	V. Antiopa (N)	V. Antiopa
Pyrameis Atalanta	P. Callirrhoe (N)	P. Atalanta
* „ Cardui	P. Cardui	P. Cardui
*Neptis Aceris (E)	N. Aceris	
Lasiommata Mæra	L. Schakra (N)	
„ Menava	L. Menava (N)	
Hipparchia Thelephassa (E)	H. Baldiva (H)	
Epinephele Janira	E. Cheena (H)	
* „ Lycaon	E. Davendra (H)	
Cœnonympha Pamphilus		C. Mornata (W)
* „ Davus		C. Davus (W)
*Chionobas Jutta (N)		C. Jutta (N)
„ Taygete (N)		C. Taygete (N)
* „ Also (N)		C. Semidea (N)
„ Polixenes (N)		C. Polixenes (N)
*Thecla Rubi		T. Dumetorum (W)
*Chrysophanus Phlæas	C. Timens	C. Americanus
* „ Dorilis		C. Epixanthe
Polyommatus Bæticus (S)	P. Bæticus	
* „ Tiresias (S)	P. Tiresias	
* „ Argiolus		P. Pseudargiolus
„ Optilete		P. Filenus
* „ Semiargus		P. Xerces (W)

Europe.	India.	North America.
*Polyommatus Ægon		P. Antægon (W)
„ Amandus		P. Icarioides (W)
„ Pheretes		P. Pheres (W)
„ Lysimon	P. Lysimon	
*Pamphila Sylvanus		P. Sylvanus (W)
„ Comma		P. Comma (W)

It will be noticed that whenever a European genus occurs in India or North America at all, European species, or very closely allied forms, are also to be found in those countries. South or East European species frequently extend to India, North European species frequently reach America, while Central European species extend throughout North Asia, and only in a few instances reach North America, and are then usually confined to the West coast. Indeed almost every species common to the Old World and North America is either Polar or Californian.

There is still considerable doubt whether the European species of Colias, &c., which are reputed North American do actually occur there, or whether allied species may not have been mistaken for them. It is also asserted, but I believe without authority, that the common Vanessæ have been introduced into North America; but this is highly improbable, as they are all wide-ranging insects, and do not feed on garden plants.

Pieris Brassicæ is replaced by P. Cheiranthi in the Canaries, and by P. Brassicoides in Abyssinia. P. Rapæ has been lately introduced into Canada. May not Anthocharis Creusa be an American variety of the widely distributed and very variable A. Belia? A. Ausonia is the only variety of Belia which I know to occur in America; does it, or any other variety of this species, occur in North Asia? Gonepteryx Cleopatra appears distinct from G. Rhamni. Is G. Cleobule, from the Canaries, distinct from G. Cleopatra? The European Colias Myrmidone is very distinct from C. Edusa; I doubt the occurrence of the true Myrmidone in India. Perhaps the intermediate Indian form may indicate that these two should be united, as Parnassius Apollo and P. Delius, though perfectly distinct in Europe, appear to blend completely into each other in Siberia. Is Lasiommata Menava sufficiently distinct from L. Hiera? Hipparchia Baldiva has been erroneously placed in the genus Lasiommata or Amecera. Polyommatus Bæticus and Telicanus are among the very few species common to Europe and South Africa; P. Pheretes is represented in North-East Asia by the *var.* (?) P. Pheretiades."—*J. W. D.*

Sedge Warbler in Dry Places.—Bearing in mind the remarks of one or more of your correspondents, and a letter of my own in the 'Zoologist' for 1865, upon the resort of the sedge warbler to dry places, and especially to lilacs in such places, I wish to report that I have this summer, as in 1866 and 1867, very frequently heard and seen what must be either that or a closely-allied species, near Twickenham, away from the river, and always in lilacs. During the first ten days of this present month, a time of great heat, I heard it daily in some of these shrubs planted close to a brick wall, on its south side exposed to the mid-day sun, as hot and as dry a position as could possibly be found. It is hard to believe that this can be the same bird with that found so commonly on the banks of the Thames, three hundred yards distant, and not in any intermediate spot, and yet the notes are identical to the ear, whether coming from the reed-bed in the water or from the scorched lilac under the south wall. It may be that some of your readers can answer two questions which arise from the foregoing observation, *viz.* Is there more than one species concerned? and if there is not, What kind of food equally attractive does the sedge warbler find among the reeds and on the lilacs?—*Clermont; Eatington Park, July* 23, 1868.

Scarcity of the House Martin.—I may here mention that I have observed a decided scarcity of the house martin this summer in various parts of the country, and have heard the same fact remarked upon by several persons in Sussex, especially near Uckfield, and in Warwickshire.—*Id.*

An Albino Humming Bird.—During the last summer a white humming bird visited many times a stand of plants on my piazza. I had several opportunities of observing it closely. It seemed a trifle larger than the ruby-throat. The neck and head were of a glossy gold-colour. Eyes large, black and brilliant. After dipping its bill into all the fuschias, it did what I never saw other humming birds do, alighted on a dwarf apple-tree within a few feet of me, and ate the aphides, or plant-lice, just as the sparrows and golden wrens do. After a hearty meal of insects it dressed its feathers, spread its wings one by one, and thrust out a very long tongue.—*L. A. Millington, in the 'American Naturalist' for April,* 1868.

Two Serpents and a Cat: a Singular Case.—The 'Messenger Algerien' relates the following curious story:—"A very singular occurrence took place in the warehouse of the Messageries Impériales at Stora. A large case containing two serpents, directed from Batna to the superintendent of the Zoological Gardens in Marseilles, was deposited in the warehouse for shipment. Whilst there a cat, ignorant of what the case contained, got into it. No sooner had it done so than the reptiles sprang at it with the rapidity of an arrow, and squeezed it to death in their immense coils. They then relaxed their hold, and commenced the process of swallowing. The male serpent seized the dead cat by the head end, the female swallowing the tail end. It is well known that when serpents take into their mouth a substance of a certain size, the conformation of the teeth and jaws is such that they cannot let go their hold. In the present case both snakes were thus brought face to face, the process of deglutition was arrested, and it became doubtful how the matter would end. At length the female snake made a desperate effort to swallow the other, and in doing so was choked." In corroboration of the above facts the animals have been preserved in spirits of wine. The directors of the Zoological Garden of Marseilles are going to bring an action against the Messageries Company for the loss of the serpents, whilst the owner of the cat demands that its skin at least should be given up to him as a matter of curiosity.

Parturition of Hippocampi.—To-day near noon I observed three young sea-horses swimming about. They had just made their *début.* Very minute creatures they were; but to my great joy, nearly perfect. From that hour the Pacermater kept busy setting his progeny adrift. At the bottom of the vessel was a broken shell, put there for the attachment of the animal's tail, when fatigued by swimming—as the sea-horse is very easily tired—and this, monkey-like, is its favourite mode of taking rest. The shell afforded real help in the labour of extruding the young, which is in no sense a parturient process, but, on the contrary, is entirely mechanical, and in the present case was effected in the following manner; with its abdomen turned towards the shell, its tail attached to the under part of it, the body erected to its full height, the animal, by a contractile exertion of the proper muscles, would draw itself downwards, and against the shell, thus rubbing the pouch upward, and in this simple yet effective way expelled the fry at the opening on top of the sack. It was said above that the sea-horse is soon wearied with even moderate exertion; hence, probably, it was that these repeated acts were each followed by a few minutes of rest. Indeed, the extrusion of its young lasted for nearly six hours, from three to six individuals being set free at a time. The scene that followed was one of singular and lively interest. I was nervous with delight, and wished that every naturalist could see it for himself. Using my best judgment—for, owing to the mazy motion of this tiny throng counting was out of the question—I set the number down as not far from a thousand. Each measured from five to six lines in length. Very minute creatures, truly, when one considers how large a portion is taken up by the tail, which organ was of but little more than thread-like dimensions. We might suppose it would require a few days for the young hippo to find out the remarkable monkey-like endowment of its tail. Not so. Only look at what my own eyes beheld many a time, when a "stampede" of these little colts was going on, although they were but one day old. There come two little hippos each swimming in a direction at right angles to that of the other. Just at the point of passing, one, lasso-like, whips his caudal extremity round that of his fellow, who, of course in like manner, returns the caudal compliment, which, to speak technically, acts as a "double-lock." Of course both pull, and, by natural law, the force is exerted in exactly opposite directions, and the right angle is resolved into a straight line. It is but poor head-way they make, nor does it mend the matter much that a third little fellow comes giddily on, and, switching his tail, takes a hitch at that precise point in space where the other two met. Now a triple force is exerted, and the effect is, with two straight lines to project three obtuse angles. And so the three toil on, obtusely labouring *in statu quo.* But a droller sight is that of yonder juvenile Lophobranch, who seems to be of somewhat belligerent proclivities, as he is leading by the nose a weaker member of his own species, having with his caudal extremity noosed him on the snout. Unfortunately these little fish perished in a few days, none living beyond a fortnight.—*Rev. S. Lockwood, in the 'American Naturalist.'*

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Are Bees injurious to Fruit?—Dr. H. A. Hagen, late of Königsburg, Prussia, who is an eminent entomologist, and who has paid special attention to the literature of bees and bee-keeping, thus writes us regarding this question:—"I have never known, and find nothing in the literature now at hand to prove that bees are obnoxious to fruits and to fields. Bees can never use the fields of *red* clover; the corolla is too long for their proboscis. But they are very frequently seen in the fields of white clover, and I have heard that these fields are obnoxious to bees, if shortly before rain has fallen."—*'American Naturalist,' April*, 1868.

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